

CILIASTATIC COMPONENTS IN THE
GAS PHASE OF CIGARETTE SMOKE.

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ABSTRACT

The ciliastatic nature of the gas phase of cigarette smoke was studied by a known procedure--stroboscopic measurement of the cilia motion of the clam gill. The method was modified in an attempt to determine which of the smoke components contributed to the ciliastasis. In addition, the effects of some experimental selective filters on the activity of cigarette smoke were studied. For determining the active components, the gas phase was separated into two fractions, condensed gases and permanent gases, distinguished by whether they condense at dry ice temperature. While both fractions inhibited the ciliary beat, the condensed portion was the more potent and was, therefore, studied in more detail. To determine the ciliastatic components of the condensed gases, a gas chromatographic technique was devised which employed dual detectors--a thermal conductivity cell and a clam gill. The condensed gases after being vaporized passed successively through a chromatographic column, the thermal conductivity cell, and across the clam specimen. When the ciliastasis curves were superimposed on the gas chromatographic curves, the acrolein region was found to be most active. The hydrogen cyanide and acetaldehyde regions also strongly inhibited the ciliary motion.

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